8-bit Microcontrollers

USBSPYDER08

Small, Simple, Flexible

Target Applications

- AC line voltage monitoring
- Battery chargers
- Computers
- DC cooling fan
- Fan control
- High-brightness light-emitting diodes
- Industrial compressors
- Industrial control
- Lighting system controls
- Low-end microwaves
- Low-power supplies
- Secure boot coprocessors
- Security systems
- Small handheld devices
- Small and large appliances
- Toasters
- Toys
- Vacuum cleaners
- Watchdog coprocessors
- Walkie-talkies

Overview

The USBSPYDER08 enables fast and easy development for embedded designers working on Freescale's low-end microcontrollers. This cost-effective, high-performance USB debug tool can:

- Spy the performance of your application in the early development stages
- Support Freescale's 8-pin (R)S08 families
- Catch bugs in your application so they can be fixed fast

To ensure speedy development, the USBSPYDER08 Discovery Kit has been manufactured to work with our Fast Track CodeWarrior™ development tools, delivering a cost-effective, yet powerful way to design your products and speed time to market.

Hardware Interface Specifications

- **Built-in USB** to background debug module (BDM) circuitry based on Freescale's MC68HC908JB16 microcontroller allows the host PC to communicate with the target microcontroller through a standard USB interface
- **Programmed 8-pin PDIP** socket populated with an MC9S08QG8 (8-pin PDIP package), with a demo application. The MC9S08QG8 can be swapped out for other target microcontrollers including the MC9S08QD4 or MC9RS08KA2.
- **Provision header connector** with all of the microcontroller signals
- **Flexible BDM connector** for debugging external devices. USBSPYDER08 uses a variation of the standard, 6-pin BDM connector defined by Freescale to program and debug external MC9RS08KA, MC9S08QD and MC9S08QG devices in any package.

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8-bit Microcontroller Seletor Guide

Part Number	Temp. Ranges	Features	Package	Speed
MC9RS08KA1	0 to +70°C	Entry-Level RS08 Core, 1K Flash/63B RAM, Analog Comparator (ACMP), Internal Clock Source, 1.8V to 5V Tolerant, Tiny Footprint, Small Form Factor	6-pin DFN (3mm2), 8-pin PDIP, 8-pin SOIC-NB	10 MHz Bus Speed
MC9RS08KA2	0 to +70°C	Entry-Level RS08 Core, 2K Flash/63B RAM, Analog Comparator (ACMP), Internal Clock Source, 1.8V to 5V Tolerant, Tiny Footprint, Small Form Factor	6-pin DFN (3mm2), 8-pin PDIP, 8-pin SOIC-NB	10 MHz Bus Speed
MC9S08QD2	-40°C to +85°C	High-Performance S08 Core, Low Power Consumption, 2K Flash/256B RAM, 4-ch., 10-bit A/D Converter and Analog Comparator (AMCP), Multiple Timer Options, Internal Clock Source, Small Footprint (8-pin packages, 1.8V to 5V Tolerant	8-pin PDIP, 8-pin SOIC-NB	10 MHz Bus Speed
MC9S08QD4	-40°C to +85°C	High-Performance S08 Core, Low Power Consumption, 4K Flash/256B RAM, 4-ch., 10-bit A/D Converter and Analog Comparator (AMCP), Multiple Timer Options, Internal Clock Source, Small Footprint (8-pin Packages, 1.8V to 5V Tolerant	8-pin PDIP, 8-pin SOIC-NB	8 MHz Bus Speed
MC9S08QG4	-40°C to +85°C	High-Performance S08 Core, Low Power Consumption, 4K Flash/256B RAM, 8-ch., 10-bit A/D Converter and Analog Comparator (ACMP), Multiple Serial Comms, Multiple Timers Option, Internal Clock Source, Small Footprint, 1.8V to 3.3V Tolerant	8-pin PDIP, 8-pin SOIC-NB, 8-pin DFN, 16-pin TSSOP, 16-pin QFN	10 MHz Bus Speed
MC9S08QG8	-40 to +85°C	High-Performance S08 Core, Low Power Consumption, 8K Flash/256B RAM, 8-ch., 10-bit A/D Converter and Analog Comparator (ACMP), Multiple Serial Comms, Multiple Timers Option, Internal Clock Source, Small Footprint, 1.8V to 3.3V Tolerant	16-pin PDIP, 16-pin TSSOP, 16-pin QFN, 8-pin DFN, 8-pin SOIC-NB	10 MHz Bus Speed

Debugging Key Features

- Real-time code execution and in-circuit debugging
- Working frequency up to 10 MHz
- Socketed target microcontroller
- BDM connector for external debugging
- Support for both 3.3V and 5V devices
- Jumperless hardware mode setting
- CodeWarrior IDE (the same user interface of all Freescale tools), with editor, assembler, C compiler and debugger

Design Challenges

The USBSPYDER08 Discovery Kit is a USB-based in-circuit debugger designed specifically for Freescale's low-end 8-bit MC9RS08KA, MC9S08QD and MC9S08QG families of microcontrollers.

By combining the hardware interfaces, Freescale offers a simple hardware solution capable of meeting key requirements in a small low-cost form factor.

By pairing the complete hardware solution with the Fast Track CodeWarrior IDE and supporting documentation on a complimentary CD, the USBSPYDER Discovery Kit gives the designer a complete, flexible debug environment.

The USBSPYDER08 Discovery Kit provides everything you need to write, compile, download, in-circuit emulate and debug user code. Full-speed program execution allows you to perform hardware and software testing in real time. With the introduction of the USBSPYDER08 tool, Freescale brings a new level of ease of development and a cost-effective debugging to 8-bit designers.

Learn More: For current information about Freescale products and documentation, please visit **www.freescale.com**.

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